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A Case Report: PCR-Assisted Diagnosis of Varicella in an Adult

Satish K. Mehta[1,*], **Don Gilden**[2,*], **Brian E. Crucian**[3], **Clarence F. Sams**[3], **Randall J. Cohrs**[2], and **Duane L. Pierson**[4]

[1]Enterprise Advisory Services, Inc., Houston, USA

[2]Department of Neurology, The University of Colorado School of Medicine, Denver, USA

[3]Human Adaptation and Countermeasures Division, NASA Johnson Space Center, Houston, USA

[4]Habitability and Environmental Factors Division, NASA Johnson Space Center, Houston, USA

Abstract

A 41-year-old woman developed skin lesions on her upper back and arm. Initially, a definitive diagnosis could not be made. Subsequently, PCR detected VZV DNA in skin lesions and saliva. Immediate antiviral treatment led to a quick recovery without complicating prolonged fatigue and weakness typically seen in adults with varicella.

Keywords

Chickenpox; Shingles; Varicella-Zoster Virus

1. Case Report

A 41-year-old woman with no history of chickenpox or vaccination with Varivax or Zostavax vaccine developed a single blister on her upper back. The next day, lesions spread to involve her upper back, left arm and hand. Because the patient worked in a biomedical research facility, vesicular fluid from one finger on the hand was aspirated and analyzed by quantitative real-time PCR for VZV DNA [1]. Later that day, laboratory results revealed that vesicular fluid removed the day before contained 3×10^{10} copies of VZV DNA per microliter confirming the diagnosis of varicella, after which the patient was treated with acyclovir, 800 mg QID for 7 days.

Before treatment on the 3rd day, fluid from another vesicle and saliva were examined. The vesicle contained 10^8 copies of VZV DNA per microliter, and saliva contained 9×10^6 copies of VZV DNA per nanogram of total DNA. On the 4th day, saliva contained 5×10^6 copies of VZV DNA per nanogram of total DNA. On the 5th and 6th day, no VZV DNA was found in saliva. No new lesions appeared after 7 days of treatment. The patient never became weak or fatigued.

One week before the patient developed varicella, her husband had a rash on the right side of his forehead and severe headache. On the patient's day 3, the husband's saliva was also analyzed by real time PCR and found to contain 820 copies of VZV DNA per nanogram of total DNA. This resulted in a diagnosis of ophthalmic-distribution zoster, and he was treated

*Corresponding author. satish.k.mehta@nasa.gov, don.gilden@ucdenver.edu.

with valacyclovir, one gram TID for 7 days. Genotyping of virus DNA [2] revealed that the same wild-type strain of VZV caused disease in both patients.

2. Discussion

We describe varicella in an adult who presented with a single vesicle on her back. The next day, the lesions had spread and both vesicles and saliva were analyzed for VZV DNA. A clinical diagnosis was uncertain on the 3rd day until PCR revealed a high copy number of VZV DNA in both vesicles and saliva. The VZV DNA copy number decreased after treatment and no new lesions appeared.

VZV DNA has been detected in saliva of children with varicella [3] and in adults with zoster [1] and zoster sine herpete [4]. Because saliva may contain infectious VZV [5], it is likely that either a broken vesicle or saliva of the patient's husband with zoster was the source of VZV transmission to the patient. Importantly, immediate anti-viral treatment was followed by a quick recovery without complicating prolonged fatigue and weakness that is characteristically seen in adults with varicella [6]. To our knowledge, this is the first case of varicella in an adult in which PCR was used to diagnose disease and in which genotyping of VZV DNA confirmed spouse-to-patient transmission.

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